

Listing of Claims:

1. (Currently Amended) An image forming apparatus
comprising:

an image forming unit for forming a correcting image for
correcting gradations of an output image, on a bearing body;

5 a sensor for measuring a reflected light quantity of the
correcting image formed on the bearing body;

a gradation correcting unit for correcting the gradations of
the output image, based on a measurement result of the measured
reflected light quantity of the correcting image; and

10 a timing correcting unit for detecting a shift of
measurement timing at which the correcting image is measured by
the sensor, based on the measurement result by the sensor, and
for correcting the detected shift of the measurement timing;

wherein:

15 the gradation correcting unit corrects the gradations
of the output image using the measurement result which is
measured at the timing corrected by the timing correcting unit,

the correcting image comprises a gradation pattern
comprising a plurality of gradations;

20 the sensor measures the reflected light quantity of the
correcting image at a fixed interval timing; and

the timing correcting unit detects a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval timing.

Claim 2 (Canceled).

3. (Currently Amended) The image forming apparatus of claim 1 comprising:

an image forming unit for forming a correcting image for correcting gradations of an output image, on a bearing body;

a sensor for measuring a reflected light quantity of the correcting image formed on the bearing body;

a gradation correcting unit for correcting the gradations of the output image, based on a measurement result of the measured reflected light quantity of the correcting image; and

a timing correcting unit for detecting a shift of measurement timing at which the correcting image is measured by the sensor, based on the measurement result by the sensor, and for correcting the detected shift of the measurement timing,

wherein:

15 the gradation correcting unit corrects the gradations
of the output image using the measurement result which is
measured at the timing corrected by the timing correcting unit,
 the correcting image comprises a gradation pattern
comprising a plurality of gradations;
20 the sensor measures the reflected light quantity of the
correcting image at a fixed interval timing; and
 the timing correcting unit detects a shift between a
specified timing prescribed in advance as a timing at which a
measurement of a head part of the gradation pattern is started,
25 and a timing at which a measured value near to an intermediate
light quantity value of measured values in a vicinity of the
specified timing is measured, as the shift of the measurement
timing, based on the measured values measured at the fixed
interval timing.

4. (Original) The image forming apparatus of claim 1,
wherein the timing correcting unit corrects the measurement
timing of the sensor by the shift quantity of the detected
measurement timing.

5. (Previously Presented) The image forming apparatus of
claim 1, wherein:

the timing correcting unit corrects the shift of the measurement timing by selecting the measured value to be applied as an output density value of each gradation in the gradation pattern among the respective measured values measured by the sensor according to the detected shift quantity of the measurement timing; and

the gradation correcting unit performs the gradation correction based on the measured value selected as the output density value of each gradation.

6. (Currently Amended) The image forming apparatus of claim 1, wherein:

the correcting image comprises a plurality of gradation patterns ~~pattern comprising a plurality of gradations~~; and

the timing correcting unit detects the respective shift of the measurement timing from the plurality of gradation patterns, and performs the correction of the measurement timing by applying the shift quantities of the measurement timing, which are detected in the respective gradation patterns, to each of the gradation patterns.

7. (Currently Amended) The image forming apparatus of claim 1, wherein:

the correcting image comprises a plurality of gradation
patterns ~~pattern comprising a plurality of gradations;~~ and

5 the timing correcting unit detects the respective shift of
the measurement timing from the plurality of gradation patterns,
and corrects the shift of the measurement timing by applying an
average value of the shift quantities, which are detected in the
respective gradation patterns, to all of the gradation patterns,
10 as a common shift quantity.

8. (Previously Presented) The image forming apparatus of
claim 6, wherein the plurality of gradation patterns are
identical.

9. (Original) The image forming apparatus of claim 6,
wherein the plurality of gradation patterns are different from
one another.

10. (Currently Amended) The image forming apparatus of
claim ~~2~~ 1, wherein each gradation of the gradation pattern is
formed in order that the measurement by the sensor is performed
in an order from a high density gradation to a low density
5 gradation.

11. (Previously Presented) The image forming apparatus of claim 1, wherein:

the correcting image comprises a plurality of colors;

the gradation correcting unit performs the gradation
5 correction of each color based on the measured value of the
reflected light quantity of the correcting image comprising the
plurality of colors; and

the timing correcting unit corrects the shift of the
measurement timing at every measurement of the reflected light
10 quantity of the correcting image of each color.

12. (Previously Presented) The image forming apparatus of claim 1, wherein:

the bearing body is a transfer member; and

the sensor measures the reflected light quantity of the
5 correcting image formed on the transfer member.

13. (Currently Amended) An image forming apparatus comprising:

an image forming unit for forming a correcting image, which
is an image for correcting gradations of an output image and
5 comprises a gradation pattern comprising a plurality of
gradations, on a bearing body;

a sensor for measuring reflected light quantities of the correcting image formed on the bearing body at a fixed interval timing;

10 a gradation correcting unit for correcting the gradations of the output image, based on measurement results of the measured reflected light quantities of the correcting image; and

a timing correcting unit for detecting a shift between a specified timing prescribed in advance as a timing at which a
15 measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed interval timing, and
20 for correcting the detected shift of the measurement timing;

wherein the gradation correcting unit corrects the gradations of the output image using ~~the~~ a measurement result which is measured at the timing corrected by the timing correcting unit.

14. (Currently Amended) An image forming apparatus comprising:

an image forming unit for forming a correcting image, which is an image for correcting gradations of an output image and

5 comprises a gradation pattern comprising a plurality of gradations, on a bearing body;

a sensor for measuring reflected light quantities of the correcting image formed on the bearing body at a fixed interval timing;

10 a gradation correcting unit for correcting the gradations of the output image, based on measurement results of the measured reflected light quantities of the correcting image; and

a timing correcting unit for detecting a shift between a specified timing prescribed in advance as a timing at which a
15 measurement of a head part of the gradation pattern is started, and a timing at which a measured value near to an intermediate light quantity value of measured values in a vicinity of the specified timing is measured, as the shift of the measurement timing, based on the measured values measured at the fixed
20 interval timing, and for correcting the detected shift of the measurement timing;

wherein the gradation correcting unit corrects the gradations of the output image using ~~the~~ a measurement result which is measured at the timing corrected by the timing correcting unit.

Claims 15-21 (Canceled).

22. (Currently Amended) A gradation correction method comprising:

forming a correcting image for correcting gradations of an output image, on a bearing body;

5 measuring a reflected light quantity of the correcting image formed on the bearing body by ~~the~~ a sensor;

detecting a shift of measurement timing at which the correcting image is measured by the sensor, based on a measurement result by the sensor, and correcting the detected
10 shift of the measurement timing; and

correcting the gradations of the output image using the measurement result which is measured at the corrected timing,
wherein:

the correcting image comprises a gradation pattern
15 comprising a plurality of gradations;

the measuring is performed by measuring the reflected light quantity of the correcting image at a fixed interval timing; and

the detecting and the correcting of the shift is performed by detecting a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value in a vicinity of the specified timing is measured,

25 as the shift of the measurement timing, based on the measured
 values measured at the fixed interval timing.

Claim 23 (Canceled).

24. (Currently Amended) The gradation correction method ~~of~~
~~claim 22~~ comprising:

forming a correcting image for correcting gradations of an
 output image, on a bearing body;

5 measuring a reflected light quantity of the correcting image
 formed on the bearing body by a sensor;

detecting a shift of measurement timing at which the
 correcting image is measured by the sensor, based on a
 measurement result by the sensor, and correcting the detected
10 shift of the measurement timing; and

correcting the gradations of the output image using the
 measurement result which is measured at the corrected timing,

 wherein:

 the correcting image comprises a gradation pattern
15 comprising a plurality of gradations;

 the measuring is performed by measuring the reflected
light quantities quantity of the correcting image at a fixed
interval timing; and

the detecting and the correcting of the shift is
20 performed by detecting a shift between a specified timing
prescribed in advance as a timing at which a measurement of a
head part of the gradation pattern is started, and a timing at
which a measured value near to an intermediate light quantity
value of measured values in a vicinity of the specified timing is
25 measured, as the shift of the measurement timing, based on the
measured values measured at the fixed interval timing.

25. (Original) The gradation correction method of claim 22,
wherein the detecting and the correcting of the shift is
performed by correcting the measurement timing of the sensor by
the shift quantity of the detected measurement timing.

26. (Previously Presented) The gradation correction method
of claim 22, wherein:

the detecting and the correcting of the shift is performed
by correcting the shift of the measurement timing by selecting
5 the measured value to be applied as an output density value of
each gradation in the gradation pattern among the respective
measured values measured by the sensor according to the detected
shift quantity of the measurement timing; and

the correcting of the gradations is performed by performing
10 the gradation correction based on the measured value selected as
the output density value of each gradation.

27. (Currently Amended) The gradation correction method of
claim 22, wherein:

the correcting image comprises a plurality of gradation
patterns ~~pattern comprising a plurality of gradations;~~ and

5 the detecting and the correcting of the shift is performed
by detecting the respective shift of the measurement timing from
the plurality of gradation patterns, and by performing the
correction of the measurement timing by applying the shift
quantities of the measurement timing, which are detected in the
10 respective gradation patterns, to each of the gradation patterns.

28. (Currently Amended) The gradation correction method of
claim 22, wherein:

the correcting image comprises a plurality of gradation
patterns ~~pattern comprising a plurality of gradations;~~ and

5 the detecting and the correcting of the shift is performed
by detecting the respective shift of the measurement timing from
the plurality of gradation patterns, and by correcting the shift
of the measurement timing by applying an average value of the
shift quantities, which are detected in the respective gradation

10 patterns, to all of the gradation patterns, as a common shift quantity.

29. (Previously Presented) The gradation correction method of claim 27, wherein the plurality of gradation patterns are identical.

30. (Original) The gradation correction method of claim 27, wherein the plurality of gradation patterns are different from one another.

31. (Currently Amended) The gradation correction method of claim ~~23~~ 22, wherein each gradation of the gradation pattern is formed in order that the measurement by the sensor is performed in an order from a high density gradation to a low density
5 gradation.

32. (Previously Presented) The gradation correction method of claim 22, wherein:

the correcting image comprises a plurality of colors;

the detecting and the correcting of the shift is performed
5 by correcting the shift of the measurement timing at every measurement of the reflected light quantity of the correcting image of each color; and

the correcting of the gradations is performed by performing the gradation correction of each color based on the measured value of the reflected light quantity of the correcting image comprising the plurality of colors.

33. (Previously Presented) The gradation correction method of claim 22, wherein:

the bearing body is a transfer member; and

the measuring is performed by measuring the reflected light quantity of the correcting image formed on the transfer member.

34. (Previously Presented) A gradation correction method comprising:

forming a correcting image, which is an image for correcting gradations of an output image and comprises a gradation pattern comprising a plurality of gradations, on a bearing body;

measuring a reflected light quantity of the correcting image formed on the bearing body, by a sensor at a fixed interval timing;

detecting a shift between a specified timing prescribed in advance as a timing at which a measurement of a head part of the gradation pattern is started, and a timing at which a measured value having a largest change of measured light quantity value in a vicinity of the specified timing is measured, as the shift of

the measurement timing, based on the measured values of the
15 reflected light quantity measured at the fixed interval timing,
and correcting the detected shift of the measurement timing; and
correcting the gradations of the output image, based on the
measured value of the reflected light quantity of the correcting
image after the correcting of the measurement timing.

35. (Previously Presented) A gradation correction method
comprising:

forming a correcting image, which is an image for correcting
gradations of an output image, and comprises a gradation pattern
5 comprising a plurality of gradations, on a bearing body;

measuring a reflected light quantity of the correcting image
formed on the bearing body by a sensor at a fixed interval
timing;

detecting a shift between a specified timing prescribed in
10 advance as a timing at which a measurement of a head part of the
gradation pattern is started, and a timing at which a measured
value near to an intermediate light quantity value of measured
values in a vicinity of the specified timing is measured, as the
shift of the measurement timing, based on the measured values of
15 the reflected light quantity measured at the fixed interval
timing, and correcting the detected shift of the measurement
timing; and

correcting the gradations of the output image, based on the
measured value of the reflected light quantity of the correcting
20 image after the correcting of the measurement timing.

Claims 36-39 (Canceled).